

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (original) A computer-implemented method for generating a computer model of one or more teeth, comprising:

receiving as input a digital data set of meshes representing the teeth;
compressing the digital data set; and
displaying the compressed digital data set.

2. (new) The method of claim 1, wherein a parametric representation is a of the digital data set is created before compressing the data.

3. (new) The method of claim 1, further comprising storing the compressed data in a file.

4. (new) The method of claim 1, further comprising transmitting the compressed data to a remote computer.

5. (new) The method of claim 4, further comprising displaying the compressed data on the remote computer.

6. (new) The method of claim 4, wherein the compressed data are transmitted over a network.

7. (new) The method of claim 6, wherein the network is a wide area network.

8. (new) The method of claim 6, wherein the network is the Internet.

9. (new) The method of claim 2, wherein creating a parametric representation further comprises generating a curve network.

10. (new) The method of claim 9, further comprising fitting the curve network to the digital data set.

11. (new) The method of claim 1, wherein receiving the digital data set comprises receiving data obtained by scanning a physical model of the teeth.

12. (new) The method of claim 1, further comprising scanning a physical model of the teeth with a destructive scanning system.

13. (new) The method of claim 12, further comprising scanning the physical model with a laser scanning system before scanning the model with the destructive scanning system.

14. (new) The method of claim 13, further comprising scanning physical models of a patient's upper and lower teeth in occlusion with the laser scanning system before scanning with the destructive scanning system.

15. (new) The method of claim 1, wherein the digital data set includes volume image data of the teeth and the method includes converting the volume image data into a 3D geometric model of the tooth surfaces.

16. (new) The method of claim 1, further comprising creating inside and outside meshes by determining an intersection between a tooth mesh and a cutter mesh.

17. (new) The method of claim 16, further comprising joining the inside and outside meshes to create a closed surface for each of the individual teeth.

18. (new) The method of claim 1, further comprising rendering a three-dimensional (3D) graphical representation of the individual teeth.

19. (new) The method of claim 18, further comprising receiving an instruction from a human user to modify the graphical representation of the teeth and modifying the graphical representation in response to the instruction.

20. (new) The method of claim 18, further comprising modifying the selected data set in response to the instruction from the user.

21. (new) The method of claim 1, further comprising delivering data representing positions of the teeth at selected points along treatment paths to an appliance fabrication system for use in fabricating at least one orthodontic appliance structured to move the teeth toward a final position for the teeth.

22. (new) The method of claim 1, further comprising storing the data set as a 3D geometric model representing visible surfaces of the corresponding tooth.

23. (new) The method of claim 22, further comprising modifying each 3D model to include hidden surfaces of the corresponding tooth.

24. (new) A computer-implemented method for generating a computer model of one or more teeth, comprising:

receiving as input a digital data set of meshes representing the teeth;
compressing the digital data set;
displaying the computer model of the teeth using the parametric representation;
rendering a three-dimensional (3D) graphical representation of the individual teeth; and

allowing a human user to select a tooth in the graphical representation and, in response, displaying information about the tooth.

25. (new) The method of claim 24 wherein rendering the graphical representation comprises rendering the teeth at a selected one of multiple viewing orthodontic-specific viewing angles.

26. (new) The method of claim 24, further comprising providing a user interface through which a human user can provide text-based comments after viewing the graphical representation of the teeth.

27. (new) The method of claim 24, wherein rendering the graphical representation comprises downloading data to a remote computer at which a human user wishes to view the graphical representation.

28. (new) The method of claim 24, further comprising receiving an input signal from a 3D gyroscopic input device controlled by a human user and using the input signal to alter an orientation of the teeth in the graphical representation.